

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of : Customer Number: 53080  
Michihito UEDA : Confirmation Number: 3028  
Patent No.: 7,449,967 : Issue Date: November 11, 2008  
Application No.: 10/532,993 : Group Art Unit: 2817  
Filed: September 30, 2005 : Examiner: James E. GOODLEY  
For: PROBABILISTIC PULSE GENERATOR AND DIFFERENTIAL ABSOLUTE VALUE  
COMPUTING ELEMENT AND MANHATTAN DISTANCE ARITHMETIC UNIT  
USING THIS

**REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 CFR 1.322**

Mail Stop Certificate of Correction  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In reviewing the above-identified patent, a printing error was discovered therein requiring correction in order to conform the Official Record in the application.

The error noted is set forth on the two attached copies of form PTO-1050 Rev. 2-93 in the manner required by the Commissioner's Notice.

Specifically, under section "(56) References Cited", both the section header --OTHER PUBLICATIONS-- and literature reference --YAMANAKA et al.; "A CMOS Stochastic Associative Processor Using PWM Chaotic Signals"; IEICE Trans. Electron.; c. 2001; Vol. E84, No. 12; pp. 1723 - 1729-- have been erroneously omitted. Attached, please find our Information

Disclosure Statement, PTO Form 1449, and stamped postcard receipt dated September 30, 2005, as well as the copy of the 1449 initialed by the Examiner which lists the omitted reference.

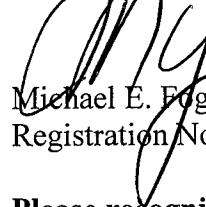
Additionally, in the claims, in Column 24, Line 4 (Claim 1), change "generator. the" to --generator, the--. Attached, please find a copy of the Amendment filed on May 5, 2008 which shows the correct version of the claim.

The change requested herein occurred as a result of printing the Letters Patent and the Certificate should be issued without expense under Rule 322 of the Rules of Practice. Accordingly, Applicants request issuance of the Certificate of Correction.

Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Michael E. Fogarty  
Registration No. 36,139

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
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**Date: March 10, 2009**

**Please recognize our Customer No. 53080  
as our correspondence address.**

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO : 7,449,967

Page 1 of 1

APPLICATION NO. : 10/532,993

ISSUE DATE : November 11, 2008

INVENTOR(S) : Michihito UEDA

It is certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the title page of the patent, in Item "(56) References Cited", below the data listed under "FOREIGN PATENT DOCUMENTS" and before the Examiner Information insert the following:

**-- OTHER PUBLICATIONS**

"YAMANAKA et al.; "A CMOS Stochastic Associative Processor Using PWM Chaotic Signals"; IEICE Trans. Electron.; c. 2001; Vol. E84, No. 12; pp. 1723 - 1729" --

In the claims, in Column 24, Line 4 (Claim 1), change "generator. the" to --generator, the--.

**MAILING ADDRESS OF SENDER (Please do not use customer number below):**

600 13th Street, N.W.  
Washington, D. C. 20005-3096

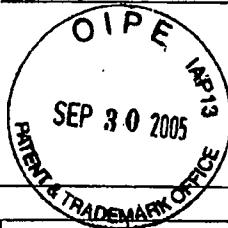
This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: ATTENTION Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



Applicant:	Michihito UEDA	Docket No.	061352-0100	Serial No.	10/532,993			
STOCHASTIC PULSE GENERATOR AND ABSOLUTE DIFFERENCE PROCESSOR, AND MANHATTAN DISTANCE PROCESSING APPARATUS EMPLOYING THE SAME								
Date Sent:	9/30/2005	<input checked="" type="checkbox"/> Hand Carried	<input type="checkbox"/> Fax	<input type="checkbox"/> Electronic	<input type="checkbox"/> Cert. of Mailing	<input type="checkbox"/> 1st Class Mail	<input type="checkbox"/> Express Mail No.	
<input checked="" type="checkbox"/> Transmittal Letter ( <u>SECOND SUBMISSION</u> )								
<input type="checkbox"/> New Patent App	<input type="checkbox"/> Utility	<input type="checkbox"/> Design	<input type="checkbox"/> Cont.	<input type="checkbox"/> CIP	<input type="checkbox"/> Div.	<input checked="" type="checkbox"/> PCT	<input type="checkbox"/> RCE	<input type="checkbox"/> Prov
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Letter submitting _____ pages of drawings <input type="checkbox"/> Req. for Approval of Drawing Amendments <input type="checkbox"/> Req. for Oral Hearing <input type="checkbox"/> Not. of Appeal <input type="checkbox"/> Appeal Brief <input type="checkbox"/> Reply Brief <input type="checkbox"/> Rule 312 Amendment/Letter <input type="checkbox"/> Req. for Acknowledgement of Cited Art <input type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee <input type="checkbox"/> Req. for Certificate of Correction <input type="checkbox"/> Maintenance Fee for _____ years after grant <input type="checkbox"/> Fee Address Indication Form <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Petition to Commissioner <input type="checkbox"/> Status Inquiry <input type="checkbox"/> Other _____							
<input type="checkbox"/> Small Entity	<input checked="" type="checkbox"/> Large Entity							
<input checked="" type="checkbox"/> Declaration/Power of Attorney								
<input type="checkbox"/> Recordation of Assignment/Security Agreement								
<input checked="" type="checkbox"/> Information Disclosure Statement								
1 _____ Form PTO 1449								
1 _____ copies of cited references								
<input type="checkbox"/> Preliminary Amendment								
<input checked="" type="checkbox"/> Response to Missing Parts Notice								
<input type="checkbox"/> Resp. to Notice to Correct App. Papers								
<input type="checkbox"/> Certified Copy of Priority Doc.								
<input type="checkbox"/> Claim for Convention Priority								
<input type="checkbox"/> Response/Amendment to Office Action of _____								
<input type="checkbox"/> Request for _____ month Extension of Time								
Check for \$ _____	<input type="checkbox"/>	Charge Deposit Acct. 500417	Atty Init.	MEF	Tkpr. #	3328	Secy. or PL:	ETEnglish

CMS Descrip.: \_\_\_\_\_

THE PATENT AND TRADEMARK OFFICE DATE STAMPED HEREON IS ACKNOWLEDGEMENT THAT THE ITEMS, CHECKED ABOVE, WERE RECEIVED BY THE PTO ON THE DATE STAMPED.





Docket No.: 061352-0100

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of : Customer Number: 20277  
Michihito UEDA : Confirmation Number: Not yet assigned  
Application No.: 10/532,993 : Group Art Unit: Not yet assigned  
Filed: April 28, 2005 : Examiner: Not yet assigned

For: STOCHASTIC PULSE GENERATOR AND ABSOLUTE DIFFERENCE PROCESSOR,  
AND MANHATTAN DISTANCE PROCESSING APPARATUS EMPLOYING THE SAME

**INFORMATION DISCLOSURE STATEMENT**

Mail Stop AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached form PTO-1449. It is respectfully requested that the documents be expressly considered during the prosecution of this application, and that the documents be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required.

Also enclosed is a partial translation of JP 48-102557 which was cited in the Information Disclosure Statement filed with the application on April 28, 2005.

The relevance of the non-English language reference is discussed in the present specification.

**10/532,993**

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP

Michael E. Fogarty  
Registration No. 196,139

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 MEF:ete  
Facsimile: 202.756.8087  
**Date: September 30, 2005**



SHEET 1 OF 1

INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION

(PTO-1449)

ATTY. DOCKET NO.  
061352-0100

SERIAL NO.  
10/532,993

APPLICANT  
Michihito UEDA

FILING DATE  
April 28, 2005

GROUP  
Not yet assigned

U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	CITE NO.	Document Number Number-Kind Code(s if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	US				

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	CITE NO.	Foreign Patent Document Country Codes-Number +-Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Figures Appear	Translation Yes      No
		JP 48-102557 A	12/22/1973			partial only

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITE NO.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
		YAMANAKA et al.; "A CMOS Stochastic Associative Processor Using PWM Chaotic Signals"; IEICE Trans. Electron.; c. 2001; Vol. E84, No. 12; pp. 1723 - 1729	

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.



SHEET 1 OF 1

**INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION**

(PTO-1449)

ATTY. DOCKET NO.  
**061352-0100**SERIAL NO.  
**10/532,993**APPLICANT  
**Michihito UEDA**FILING DATE  
**April 28, 2005**GROUP  
**Not yet assigned****U.S. PATENT DOCUMENTS**

EXAMINER'S INITIALS	CITE NO.	Document Number Number-Kind Code <sub>2</sub> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	US				

**FOREIGN PATENT DOCUMENTS**

EXAMINER'S INITIALS	CITE NO.	Foreign Patent Document Country Code <sub>3</sub> -Number + Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Figures Appear	Translation Yes      No
/JG/		JP 48-102557 A	12/22/1973			partial only

**OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)**

EXAMINER'S INITIALS	CITE NO.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
/JG/		YAMANAKA et al.; "A CMOS Stochastic Associative Processor Using PWM Chaotic Signals"; <i>IEICE Trans. Electron.</i> ; c. 2001; Vol. E84, No. 12; pp. 1723 - 1728	

EXAMINER  
*/James Goodley/*DATE CONSIDERED  
*09/18/2008*

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 608. Draw line through citation if not in conformance and not considered.

Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	3252623
<b>Application Number:</b>	10532993
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3028
<b>Title of Invention:</b>	Probabilistic pulse generator and differential absolute value computing element and manhattan distance arithmetic unit using this
<b>First Named Inventor/Applicant Name:</b>	Michihito Ueda
<b>Customer Number:</b>	53080
<b>Filer:</b>	Eric M. Shelton/Connie Collins
<b>Filer Authorized By:</b>	Eric M. Shelton
<b>Attorney Docket Number:</b>	061352-0100
<b>Receipt Date:</b>	05-MAY-2008
<b>Filing Date:</b>	30-SEP-2005
<b>Time Stamp:</b>	13:56:16
<b>Application Type:</b>	U.S. National Stage under 35 USC 371

### Payment information:

Submitted with Payment	no
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### File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		61352100_Amdt_10532993.pdf	139548 4850a7f936282f604d09f6061a7a7c1aa 96d62b2	yes	5

Multipart Description/PDF files in .zip description			
	Document Description	Start	End
	Amendment - After Non-Final Rejection	1	1
	Claims	2	3
	Applicant Arguments/Remarks Made in an Amendment	4	5

**Warnings:**

**Information:**

Total Files Size (in bytes):	139548
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of : Customer Number: 53080  
Michihito UEDA : Confirmation Number: 3028  
Application No.: 10/532,993 : Group Art Unit: 2817  
Filed: September 30, 2005 : Examiner: GOODLEY, James E.  
:  
For: PROBABILISTIC PULSE GENERATOR AND DIFFERENTIAL ABSOLUTE VALUE  
COMPUTING ELEMENT AND MANHATTAN DISTANCE ARITHMETIC UNIT  
USING THIS

**AMENDMENT**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the non-final Office Action dated April 1, 2008 having a three-month shortened statutory period for response set to expire July 1, 2008, please amend the above-identified application as follows:

**Amendments to the Claims** are reflected in the listing of claims beginning on page 2 of this paper. This listing of claims replaces all prior versions, and listings, of claims in the application.

**Remarks** begin on page 4 of this paper.

**AMENDMENTS TO THE CLAIMS**

*Please enter the following amendments:*

1 – 13. (Canceled)

14. (Currently Amended) An absolute difference processor comprising first and second stochastic pulse generators each comprising

~~a stochastic pulse generator as recited in claim 1, a variable signal generator operative to generate a variable signal which varies randomly, and a comparator operative to output a binary signal of High or Low depending on which of one input signal and another input signal is larger or smaller than the other, wherein~~

~~when the variable signal is inputted as said one input signal to the comparator from the variable signal generator, the comparator stochastically outputs pulses, the number of which corresponds to a magnitude of said another input signal; and~~

an exclusive-OR circuit for outputting an exclusive-OR of an output of the first stochastic pulse generator and an output of the second stochastic pulse generator; wherein when said another input signal and the variable signal which are inputted to the first stochastic pulse generator are  $V_{S1}$  and  $V_{C1}$ , respectively, while the output of the first stochastic pulse generator is  $V_{O1}$ , and said another input signal and the variable signal which are inputted to the second stochastic pulse generator are  $V_{S2}$  and  $V_{C2}$ , respectively, while the output of the second stochastic pulse generator is  $V_{O2}$ , the variable signals  $V_{C1}$  and  $V_{C2}$  are the same variable signal:

thereby obtaining an absolute difference between the value of said another input signal  $V_{S1}$  and that of said another input signal  $V_{S2}$  in the form of a number of stochastic pulses comprising the exclusive-OR.

15. (Original) The absolute difference processor according to claim 14, wherein the stochastic pulses comprising the exclusive-OR are generated with a pulse generation probability which lowers with decreasing absolute difference between the value of said another input signal  $V_{S1}$  and that of said another input signal  $V_{S2}$ .

16. (Original) The absolute difference processor according to claim 14, wherein the variable signals  $V_{C1}$  and  $V_{C2}$  are generated to repeat the same progression.

17. (Original) A Manhattan distance processing apparatus comprising a plurality of absolute difference processors as recited in claim 14 which are connected in parallel with the single variable signal generator, wherein

signals corresponding to elements of respective of two vectors each having the elements, a number of which corresponds to the number of the absolute difference processors, are inputted as said another input signal  $V_{S1}$  and said another input signal  $V_{S2}$  to each of the absolute difference processors,

thereby obtaining a Manhattan distance between the two vectors in the form of number of stochastic pulses.

18. (Canceled).

**REMARKS**

Claims 14-17 are currently pending. By this response to the non-final Office Action dated April 1, 2008, claim 14 is amended, and claims 1-13 and 18 are canceled. Applicant appreciates the indication of claims 14-17 as reciting allowable subject matter. No new matter has been introduced. Favorable reconsideration of the application in light of the following comments is respectfully solicited

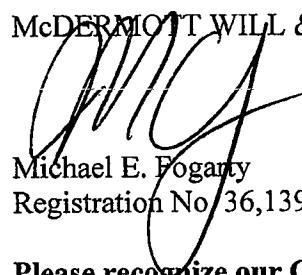
On page 6 of the Office Action, claims 14-17 are indicated as allowable if rewritten in independent form. Applicant has adopted Examiner's suggestion, and rewritten claim 14 into independent form. Claims 15-17 depend upon claim 14. Thus, Applicant respectfully requests withdrawal of the objections against claims 14-17.

As only allowable claims 14-17 are pending, Applicant respectfully submits that the application is in condition for allowance, and respectfully requests the Examiner's favorable reconsideration as to allowance. The Examiner is invited to contact the Applicant's representative listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Michael E. Fogarty  
Registration No 36,139

**Please recognize our Customer No. 53080  
as our correspondence address.**

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 MEF/EMS:cac  
Facsimile: 202.756.8087  
**Date: May 5, 2008**